

CLAIMS

What is claimed is:

1. Apparatus comprising a perfusion fluid loop for maintaining an *ex vivo* organ in viable condition for transplantation, said perfusion fluid loop comprising:
an organ container for receiving an organ to be transported,
a bubble remover for removing gas bubbles from perfusion fluid disposed in said perfusion fluid loop, and
an oxygenator for supplying oxygen to and removing carbon dioxide from perfusion fluid disposed in said perfusion fluid loop.
2. The apparatus of claim 1, which is a compact assembly for transportation of an organ.
3. The apparatus of claim 1, further comprising a pump for circulating a perfusion fluid in said perfusion fluid loop.
4. The apparatus of claim 3, in which said perfusion loop further comprises a flexible tube and said pump comprises a peristaltic impeller for driving fluid flow in said flexible tube.
5. The apparatus of claim 1, further comprising an outer container for carrying said perfusion fluid loop.
6. The apparatus of claim 1, further comprising tubing for connecting said organ container, bubble remover, and oxygenator to define said perfusion loop.
7. The apparatus of claim 6, further comprising quick connect-disconnect couplings for connecting said tubing to said organ container, bubble remover, and oxygenator.

8. The apparatus of claim 7 in which said quick connect-disconnect couplings are color-coded.

9. The apparatus of claim 1, further comprising a perfusion fluid disposed in said perfusion fluid loop.

10. The apparatus of claim 1, in which said bubble remover is a separate chamber from said oxygenator and said organ container.

11. The apparatus of claim 1, in which said oxygenator is a separate chamber from said organ container and said bubble remover.

12. The apparatus of claim 1, in which said organ container is a separate chamber from said oxygenator and said bubble remover.

13. The apparatus of claim 1, in which said perfusion fluid loop comprises a headspace positioned for collecting a gas from perfusion fluid and a venting valve communicating with said headspace, through which a gas may be vented to the atmosphere.

14. The apparatus of claim 13, in which said venting valve is a check valve to permit flow of fluid out of said perfusion fluid loop.

15. The apparatus of claim 1, in which said organ container has an inlet and an outlet for perfusion fluid.

16. The apparatus of claim 1, further comprising an adapter having a first portion defining a perfusion fluid inlet and a second portion adapted for connection to a vessel of an organ in said organ container, for directing perfusion fluid into the vessel.

17. The apparatus of claim 16, wherein said adapter fluid inlet comprises a quick connect-disconnect hose connection.

18. The apparatus of claim 16, in which said organ container comprises a cover having an inside portion and an outside portion.

19. The apparatus of claim 18, in which said adapter is connected to the inside portion of said cover.

20. The apparatus of claim 16, in which said organ container has an opening sized to pass an organ into said organ chamber, normally closed by a cover in use, said cover having an inside portion and an outside portion.

21. The apparatus of claim 20, said adapter having a generally radially outwardly extending flange between its first and second portions, said flange comprising at least a portion of said cover.

22. The apparatus of claim 20, in which said adapter is mounted to project through said cover.

23. The apparatus of claim 22, in which the first portion of said adapter projects outward from said outside portion of said cover.

24. The apparatus of claim 22, where the second portion of said adapter projects into said organ chamber.

25. The apparatus of claim 16, where the second portion of said adapter comprises a generally tubular stem having a surface adapted for engaging a vessel of an *ex vivo* organ in a fluid transfer relation.

26. The apparatus of claim 25, where said stem has a distal portion and a bight portion, in which said distal portion has a larger circumference than said bight portion.

27. The apparatus of claim 26, in which said distal portion comprises a flange.

28. The apparatus of claim 1 in which the cross-sectional area of the upper portion of said bubble remover is larger than the cross-sectional area of the lower portion of said bubble remover.

29. The apparatus of claim 1, in which said bubble remover has an inlet and an outlet for perfusion fluid.

30. The apparatus of claim 1 in which said oxygenator comprises:

- an inner vessel defined by tubing having a wall permeable to gas but not to liquid, said wall having an interior surface, an exterior surface, and a first lumen defined by said interior surface, and
- an outer vessel enclosing at least a portion of said tubing, the space between said inner and outer vessels defining a second lumen,

one of said lumens being adapted to receive a perfusion fluid, and the other of said lumens being adapted to receive a fluid comprising oxygen.

31. The apparatus of claim 30, comprising plural said inner vessels defining plural first lumens enclosed at least in part by said outer vessel.

32. The apparatus of claim 1, in which said oxygenator has an inlet and an outlet for perfusion fluid.

33. An organ transporter for containing, supporting, and perfusing an *ex vivo* organ, said apparatus comprising:

- an organ container for containing an organ and perfusion fluid, said organ container defining an organ chamber, and
- an adapter having a first portion defining a hose connector and a second portion adapted for connection to a vessel of an organ in said organ chamber, for directing a perfusion fluid into the vessel.